

central portion is at least about 10 percent less than the hole area per unit area percent of the two end portions.

REMARKS

This amendment is in response to the Office Action mailed November 28, 2003, to the Advisory Action signed on November 7, 2003 and to the Final Office Action mailed August 13, 2003. Claims 1-24 remain in the application. Claims 1, 3, 5-7, 9 and 16-21 were allowed and 2-4, 8-15 and 21-24 were rejected under 35 USC 112, second paragraph. The claims now have the correct status identifier. Applicant appreciates the Examiner pointing out why he believes certain words in the claims lacked antecedent basis. Also, claims 21 and 23 have been amended to clarify that the channel position is in the bushing leg, not the channel. Applicant believes that the above amendments address all of the claim issues pointed out by the Examiner. Applicant respectfully requests that these amendments be entered and that all of the claims be allowed.

The invention of the present claims involves the manipulation of the hole area in portions of a bushing screen, namely end portions, the screen spaced above a tip plate in a fiberizing bushing. The purpose of the manipulation of the hole area is to address various problems, or needs including temperature profile of the tip or orifice plate and flexibility to manufacture different products without having to change the bushing, thus improving the usefulness and productivity of bushings.

When a furnace, such as the furnace 2 shown in Figure 1, is being pulled hard, i.e. operated close to maximum capacity, the molten glass coming out of the furnace into a channel 4 has a higher temperature than desired and also comes out of the channel 4 into the bushing legs 6, 8 hotter than desired, see Figure 1 and page 1 of the specification, the last sentence of the first full paragraph. As a result, the hottest glass dives into the orifices in the legs leading to the first bushing positions, the position closest

to, next to the channel 4 causing the tip plate temperature profile in the bushing located in this position and causing the fiber break rate to increase, reducing productivity, see page 2, the first two full paragraphs. As pointed out in the last paragraph on page 9, "This hottest glass tends to dive into the first, and sometimes the second, (emphasis added) bushing positions 12 and 16 in the bushing legs." Thus, the channel positions are those positions which are affected by the hotter than desired glass coming out of the channel into the bushing legs, the position in each leg closest to the channel, and sometimes the second bushing position in the leg, the next closest position to the channel.

The Examiner rejected claims 2, 8-15, and 21-24 under 35 USC 112, second paragraph as being indefinite for various reasons. One of the reasons given was that various terms in the claims lack antecedent basis. Applicant notes that when applying the standard apparently now used by the Examiner for antecedent basis that amendment of some of the allowed claims also appeared appropriate. Applicant has thus amended claims 2-11 and 21-24 to address lack of antecedent bases and believes that all of the objected to words or phrases objected to by the Examiner have been properly addressed, although Applicant does not believe that using "the" instead of "a" causes a claim to be indefinite under 35 USC 112, second paragraph, in most instances. The MPEP suggests that lack of antecedent basis be used only in aggravated situations where the lack of antecedent basis makes the scope of the claim indeterminate. Applicant believes that the claims now are free of "lack of antecedent basis" and respectfully requests the Examiner to withdraw this rejection and allow all of the claims.

The Examiner also rejected claims 21-24 under 35 USC 112, second paragraph, urging that the term "channel position" is indefinite because its meaning is not readily apparent. This rejection is traversed because the term "channel position" is clearly defined in the specification, as pointed out above, as the two bushing positions in each bushing leg closest to the channel. Claims 21 and 23 have been amended to remove any possibility of misunderstanding as to what is particularly pointed out and claimed. Further basis for this position is as follows:

Page 1, second full paragraph, reads "In the manufacture of continuous fibers from a molten material like molten glass, the molten material is often generated by a tank furnace and distributed to a plurality of fiberizing bushings via one or more channels and

one or more bushing legs connected to the channel(s). Each bushing leg comes off the channel at about 90 degrees and contains a plurality of bushings that are spaced apart. The molten material exiting the tank furnace into the channel(s) is much hotter than desired for fiberizing and the molten material entering the bushing legs is typically hotter than desired for fiberizing, particularly when the furnace is being run close to designed capacity". This latter underlined disclosure describes one of the needs that is satisfied by the present invention. Overall, this disclosure defines the channel as the means for distributing hot, molten glass from the melting tank to bushings in bushing legs that communicate with the channel, usually at right angles, each leg holding a plurality of fiberizing bushings that are spaced along the leg, things well known to those of ordinary skill in the art of making continuous fiber as acknowledged in Figure 1.

Page 2, first full paragraph, reads in part "often there is at least a streak of molten material in the flow that is significantly hotter than the molten material next to the walls of the channel. This hotter material has a lower viscosity than the cooler material next to the walls. When it enters the bushing, always in the first position next to the channel and sometimes in the second position of a bushing leg, (emphasis added) it flows through holes in a conventional screen in the bushing faster than the cooler material. This causes the temperature profile of the tip plate spaced below the screen to be non-uniform. When this happens, a generally central portion of the length of the bushing tip plate runs considerably hotter than the ends. This hotter central portion can be offset to the down stream end due to the velocity vector of the hotter stream of glass". The hot glass has a higher velocity down center of the bushing leg and down the orifices to the bushings than the colder glass next to the walls and bottom". This disclosure clearly points out that the problem caused by the hot streak of molten glass always affects the first bushing position next to the channel (i. e. the bushing position closest to the channel) and sometimes affects the second position of a bushing leg.

Page 2, second full paragraph, reads, "The first position in each of the legs, the positions next to the channel, are called channel positions. The channel position in each leg has the most glass passing over it than any of the remaining bushings in the leg, and the velocity of the molten glass passing over the channel positions can be significantly higher than it is further down the leg. When hot glass dives into the orifices feeding the channel positions, it substantially increases the break rate of the bushing and also increases the variation of the fiber diameters of the fiber coming from the bushing due to the higher temperature gradient this condition causes across the tip plate". As mentioned in the previous paragraph, the first position, the position next to the channel, always is affected

by the hot streak, and sometimes the hot streak also affects the second position. This paragraph defines the first position as a "channel position" and the previous paragraph discloses that sometimes the "second position" can also be a "channel position". Whether or not the second position is also a channel position, i. e. affected detrimentally by the hot streak of molten glass, usually caused by flowing more hot glass down the channel than the channel can cool properly prior to the molten glass entering a bushing leg - see page 9, second full paragraph, which reads in part "Although the molten glass loses temperature as it runs through the channel 4, at least when pulling a furnace at or near the maximum rate, the temperature of the molten glass is still too hot for good fiberization. When this condition exists, the glass in the center of the flow tends to be the hottest and runs faster than the cooler glass closer to the walls and the bottom of the channel. This hottest glass tends to dive into the first, and sometimes the second, bushing positions 12 and 16 in the bushing legs". Again, this text, and bushing positions 12 and 16 shown in Figure 1 when read in the light of the earlier pointed out disclosure, clearly point out what is meant by "channel positions".

Page 3, second partial paragraph reads in part, "This discovery has led to bushings for the channel positions that allow fiberization in the channel positions with much improved efficiency, compared to using conventional bushings in these positions, and similar efficiency to other positions. This invention also reduces the fiber diameter variation of the fibers produced from the channel positions". This disclosure, in the Summary of the Invention section confirms that one use of the present invention is the improvement of efficiency and fiber diameter uniformity in the channel positions. The claimed invention also addresses other needs in other uses, but that is pointed out throughout the disclosure.

Applicant does not know why the Board of Appeals decision stated that "the meaning of various terms such as "channel positions" are not readily apparent from the specification" in view of the disclosure pointed out above, and further because the author of the Board Opinion did not point to any place where the disclosure made this term indefinite. However, Applicant believes that this disclosure discussed above, when read in the context of the other disclosure and with ordinary knowledge of the pertinent art, clearly points out what is meant by "channel positions" and respectfully requests the Examiner to withdraw this rejection and allow all of the claims.

The Examiner also rejected claims 2, 8-15, and 21-24 under 35 USC 112, second paragraph, as being indefinite, urging that the terms "mid or central portion" and "end

"portions" appear to lack meanings which are readily apparent from the prior art. This is a new rejection because the Board of Appeals, taking the time and extra work to make a new ground of rejection, did not consider these terms to be indefinite. The Examiner points to U.S. Pat. No. 5,935,291, Fig. 7, as an example of a complex pattern at the end of a bushing screen, but this patent is not prior art with respect to Applicant's claims. Also note that issued claims in this patent comprise a perforated plate having a "central region" and a "peripheral region". Applicant believes that "mid or central portion" is just as definite as "central region" and that "end portion" is just as definite as "peripheral region".

The Examiner urges that the Board of Appeals took a position that an "end portion" cannot be an arbitrary portion. The Board did not so state, but rather on pages 10 and 11 of the opinion did state that "As noted above in connection with the rejection of claim 2 (rejected under 35 USC 102 (b)), it is inappropriate for the examiner to "arbitrarily" define or redesignate various portions of the prior art apparatuses to achieve the claimed invention. It is improper for the examiner to conclude that it would have been obvious to make various modifications of the prior art devices and methods to achieve the claimed invention based solely on his own opinion and absent identifying a teaching or suggestion in the prior art which supports his position." Thus, the Board did not state that the "end portion" is of arbitrary meaning, nor did the Board state that the term was a "specific portion". Rather the Board based its decision on the fact that the examiner was relying on something that he had not shown was present in the prior art. The Examiner admits that 35 USC 112 does not require an applicant to put specific dimensions into the claims. It is obvious to one of ordinary skill in the art that the areas of the "end portion" and the "mid or central portion" will vary as the size of the bushing changes. It is well known that different size bushings, i. e. different number of tips, are used to make different products and on different furnaces or bushing legs due to the technology of that bushing leg. Improvements are being made every year, but furnaces, and bushing legs, are rebuilt and brought up to date typically every 5 years or more. Thus, applicant should not be required to specify the area of the end portions or the mid or central portions.

The Examiner urges that these terms were in the minds of the Board of Appeals as evidenced by their statement "Various claim terms are indefinite in that they lack antecedent basis" (emphasis added). The board went further to point out some of the terms they were referring to, "the channel", "said bushing" etc. Note that this reason is for lack of antecedent basis, not that the terms or words themselves were vague or indefinite. Applicant believes that the rejection by the Examiner of the terms "mid or

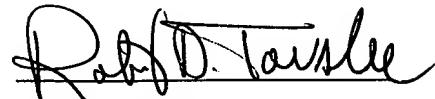
central portion" and "end portion" as being vague and indefinite is in error and that it is not part of the Board of Appeals rejection. Applicant believes that he has corrected all of the reasons for the Board of Appeals new rejection.

It is well established that 35 USC 112 does not require the claims to specify dimensions of elements of the invention unless the dimension is the novel feature, which is not the case here. Applicant disagrees with the Examiner's allegation that Applicant believes the end portion of the present invention is a "specific portion", i. e. a specific size and location. As disclosure points out in more than one place, such as the paragraph spanning pages 12 and 13 that in that example one end portion (50) of the inventive bushing screen can be of different dimensions than an opposite end portion (52) and an example is shown in Figure 6. The disclosure in the first full paragraph of page 4 describes the "end portions" as being on either side of the mid or central portion and Figure 6 and related text describes an end portion as being at or near an end of the screen. As to the "mid or center portion" such as 48 in the Figure 6 example, what is indefinite about this term. This portion of the screen contains the middle, the mid point, and the center of the bushing screen. What else would be reasonable to call this portion of the screen? The Examiner stated that he did not find anything in the specification to support this meaning. The dictionary, Funk and Wagnall's Standard Dictionary of the English Language defines "central" as "Of or pertaining to the center, situated at or near the middle --". Also, the drawings support the location of the terms. Applicant believes that the terms "end portion" and "mid or central portion" when used to describe the present invention and when read in the light of the disclosure meets the requirements of 35 USC 112, second paragraph, and respectfully requests the Examiner to withdraw this rejection and to allow all of the claims.

Applicant's attorney believes that the amended claims above address all of the Board of Appeals' bases and reasons and the Examiner's reasons for rejection and are now in condition for allowance. If the Examiner believes that still further changes are needed, applicant's attorney again suggests a telephone interview and respectfully

requests the Examiner to call the number below to arrange a time suitable to the Examiner. Thank you.

Respectfully submitted,



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